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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/273,643	03/23/1999	JUNG-HYUN HWANG	SAMJ-069	7387

7590

05/07/2004

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EXAMINER

TILLERY, RASHAWN N

ART UNIT	PAPER NUMBER
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2612

DATE MAILED: 05/07/2004

16

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/273,643

Applicant(s)

HWANG ET AL.

Examiner

Rashawn N Tillery

Art Unit

2612

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9-12 is/are allowed.
- 6) ☒ Claim(s) 1-6 and 13-18 is/are rejected.
- 7) ☒ Claim(s) 7, 8, 19 and 20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

Response to Arguments

Applicant's arguments filed March 22, 2004 have been fully considered but they are not persuasive.

Applicant's disagreement with the Examiner's contention that Kawabata teaches amplification in the analog domain is duly noted. However, the Examiner maintains the position expressed in the Arguments section of paper # 11.

The examiner notes that the combination of Kawabata and Heida performs gain amplification on a partitioned analog image signal and gamma correction on a digital representation of the partitioned analog signal as discussed below.

Applicant is not claiming that the gamma curve is partitioned into several sections and each curve of a section is corrected. Applicant's claim language could be interpreted such that only one histogram is generated and both gain amplification and gamma correction are performed on the plurality of sections of that histogram. When in fact, as shown in figure 1 of the specification, the output of 105 is amplified and the output of 109a is gamma-corrected according to each section of the histogram.

Therefore, the rejection is maintained.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-5 and 13-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawabata et al (US6373533) in view of Hieda (US5818521).

Kawabata teaches a tone correction circuit for correcting the tone of a video signal using a histogram. The histogram additionally is corrected using an adjustable gain controller. The histogram generator 1, in figure 1, partitions a luminance signal in the form of a histogram and outputs the histogram to histogram correction circuit 3. Gain controller 3 is capable of applying different gains to each section (see col. 2, line 64 to col. 3, line 12; also see figure 3).

Hieda teaches an image pickup apparatus for varying its gamma correction characteristic by using digital signal processing. In figure 3, each segment of a gamma curve is adjusted accordingly (see col. 6, lines 16-58).

Regarding claims 1 and 13, Kawabata discloses, in figure 1, an imaging apparatus comprising:

first signal processing means (1 and 2) for partitioning the level of an analog image signal into a plurality of sections (histogram generator 1), and for amplifying the

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analog image signal by a plurality of gains according to each section of the plurality of sections (gain controller 2), at least two of the sections having different corresponding gains (in figure 3, S2 and S3 have different gain adjustments).

Kawabata does not expressly disclose a second signal processing means for non-linearly gamma correcting a digital signal. Hieda, however, reveals that it is well known in the art to non-linearly gamma correct a digital signal according to plurality of sections on which the amplification of the analog image signal by the first signal processing means is based section (see col. 10, lines 11-38; also see figure 9). It would have been obvious to one of ordinary skill in the art, given Kawabata's teachings of variably adjusting the gain of individual sections of a histogram in view of Hieda's teachings of variably adjusting sections of a gamma curve, to perform non-linearly gamma correction on a gain adjusted histogram according to each section. One would have been motivated to partition the image signal and adjust the gain and perform gamma correction for individual sections in an effort to attain appropriate settings in accordance with the conditions of a subject to be photographed.

Regarding claims 2 and 14, Kawabata inherently teaches an analog-to-digital converter since the histogram generator 1, in figure 1, partitions a luminance signal in the form of a histogram;

a gain selector (2) for selecting the corresponding gain from the plurality of different gains according to each of the plurality of sections, and for outputting the selected gain; and

an amplifier (4) for amplifying the analog signal by the gain output from the gain selector.

Regarding claims 3 and 15, Kawabata inherently discloses a microcomputer for providing the plurality of gains since it is taught that the histogram correction circuit calculates a look-up table (see the Abstract).

Regarding claims 4 and 16, Kawabata discloses the plurality of different gains are approximately inversely proportional to the luminance level of the analog image signal (inherent feature).

Regarding claims 5 and 17, see claim 1 above.

2. Claims 6 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawabata et al in view of Hieda in further view of Kuo et al (US5982929).

Regarding claims 6 and 18, Kawabata teaches a tone correction circuit for correcting the tone of a video signal using a histogram. Hieda teaches an image pickup apparatus for varying its gamma correction characteristic by using digital signal processing. Neither Kawabata nor Heida explicitly disclose controlling chrominance gain of a non-linearly gamma-corrected digital signal. Kuo teaches "enhancing" the color of a video signal by applying gains to it. In figure 3 Kuo generates a histogram showing the distribution of intensity components for a color image. The histogram indicates over-exposure and under-exposure of a given image (see col. 5, line 31 to col. 6, line 54). It would have been obvious to one of ordinary skill in the art implement Kuo's teachings of "enhancement" of a color image using gain adjustment to the combination of Kawabata and Heida since the combination teaches performing non-

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linearly gamma correction on a gain adjusted histogram according to each section. One would have been motivated to do so in an effort to optimally enhance a color image without the introduction of color distortion.

Allowable Subject Matter

1. Claims 7-8 and 19-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claims 7 and 19, the prior art does not teach or fairly suggest an imaging apparatus comprising a first processing means and a second processing means, wherein

the system further comprises passing a low-frequency component, partitioning the level of the luminance signal, passing a high-frequency component, multiplying the chrominance signal, adding the result of the multiply to the luminance signal, dividing the result of the add by 2 and clipping to 0 if the result of the division is less than 0.

2. Claims 9-12 are allowed.

Regarding claim 9, the prior art does not teach or fairly suggest an imaging apparatus comprising an amplifier, an analog-to-digital converter, a chrominance controller and a digital signal processor, wherein

the amplifier outputs to the ADC, the ADC outputs to the chrominance controller and the controller outputs to the processor.

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Conclusion

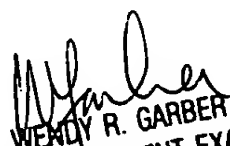
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Lee teaches a conventional method of gamma correction by analog transformation. A gamma-corrected curve is partitioned into a plurality of sections.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rashawn N Tillery whose telephone number is 703-305-0627. The examiner can normally be reached on 9AM-6:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber can be reached on 703-305-4929. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RNT


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